



TETANUS: Considerations for Critical Care Nurses

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NMC Code (2008): Practice effectively

- ▶ 6. Always practise in line with the best available evidence
- ▶ To achieve this, you must:
 - ▶ 6.1 make sure that any information or advice given is evidence-based, including information relating to using any healthcare products or services, and
 - ▶ 6.2 maintain the knowledge and skills you need for safe and effective practice.

Incidence

- ▶ Globally incidence of tetanus reducing
- ▶ Preventable through effective vaccination programmes
- ▶ World Health Organisation
 - ▶ Aims to eradicate Maternal & Neonatal Tetanus (MNT)
 - ▶ 18 countries have been unable to achieve this so far
 - ▶ In Africa:
 - ▶ 2015, 3529 cases
 - ▶ 1980 > 110,000 cases
- ▶ Public Health England
 - ▶ In 2016, only four recorded cases and no deaths in UK

Tetanus

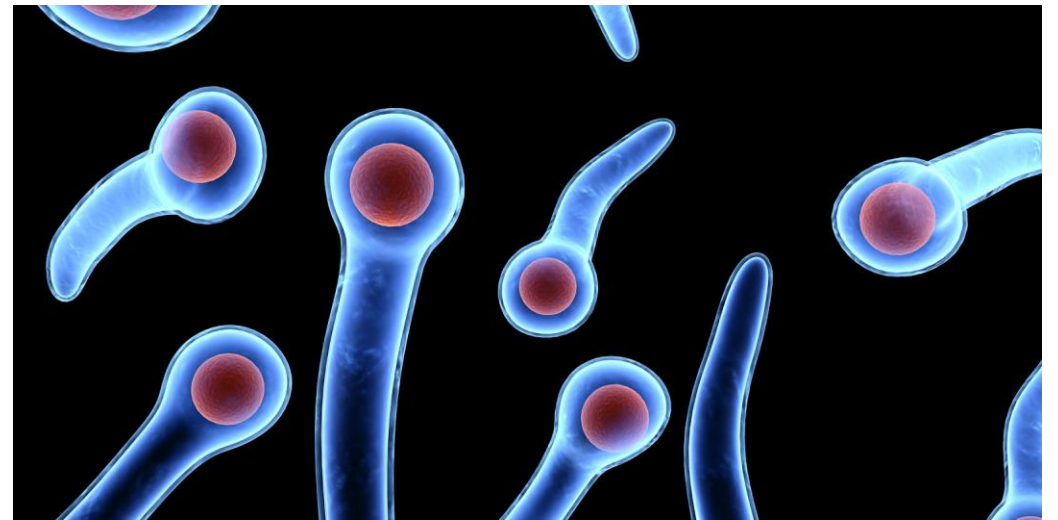
- ▶ Inadequate vaccination programmes
- ▶ Conflict or disaster resulting in vaccination programmes stopping or sporadic
- ▶ Individuals missing vaccinations due to poor access to health care services
- ▶ Reporting variable

Types of Tetanus

Generalised	Most common
Localised	Mild Involves rigidity of muscles around site of inoculation
Cephalic	Rare
Neonatal	Caused by poor umbilical cord / delivery practices

Clostridium Tetani

- ▶ Gram-positive bacillus
- ▶ Normally enters the body via a contaminated wound
 - ▶ E.g. manure, soil, rusty nail, unclean umbilical cord practice, puncture wounds (ballistics)
 - ▶ Tetanospasmin (neurotoxin) causes spasms by affecting the central nervous system, interfering with the neurotransmitters.
- ▶ Signs & Symptoms: Trismus, abdominal wall rigidity, spasms in the arms and legs, severe pain, spasms triggered by sensory stimulus, possible airway obstruction or respiratory compromise, autonomic dysfunction, rhabdomyolysis & renal failure.



Case Study

- ▶ 19 year old male, previously fit and well, with no PMH.
- ▶ Presented with increasing lower back pain and fever for four days.
- ▶ On assessment observations stable, but he was in pain.
- ▶ No visible wounds or recent injuries
- ▶ Initial diagnosis was spondylosis.
- ▶ Transferred to the 'admissions ward'



Ward Based Care

DAY 1

- ▶ Remained in pain
- ▶ Episode of hypotension- responded with bolus of 500ml crystalloid, and IV fluids over 8 hours

DAY 2

- ▶ Urgent Medical Review
 - ▶ Trismus, spasms in his back and developed lower limb weakness.
 - ▶ Tetanus immunoglobulin (150units/kg) IM given
 - ▶ IV Metronidazole 500mg and Diazepam 5mg
 - ▶ Ward based care continued

DAY 4

- ▶ Increasing severity of trismus and seizures.
- ▶ Decision to admit to ICU

Respiratory

- ▶ Continued to deteriorate
- ▶ Concerns regarding his airway:
 - ▶ Severe trismus
 - ▶ Sedation / analgesia causing drowsiness
 - ▶ Risus Sardonius
 - ▶ Glottal and laryngeal spasms result in saliva being aspirated into the airway
- ▶ Oxygen therapy commenced to maintain saturations above 95%



In the event of an emergency intubation: Call ENT and Anaesthetist immediately

Plan A:

- ▶ Perform awake / asleep nasal or fibre-optic intubation if competent
- ▶ Consider atropine as antisialagogue
- ▶ Or
 - ▶ Direct laryngoscopy and oral intubation
 - ▶ If unsuccessful go to plan B

Plan B:

- ▶ OPA and two NPA and BVM ventilation
- ▶ If unsuccessful go to plan C

Plan C:

- ▶ Insertion of LMA
- ▶ If unsuccessful go to plan D

Plan D:

- ▶ Surgical cricothyroidotomy
- ▶ Scale, bougie and tracheostomy tubes to be available at bedside at all times

Cardiovascular

- ▶ Autonomic dysfunction:
 - ▶ Rapid deterioration (bradycardia, tachycardia, hypotension, hypertension)
- ▶ Complications of magnesium infusion
- ▶ Management of shock
 - ▶ Crystalloids versus inotropes
- ▶ Urinary catheter (output $>0.5\text{ml/kg/hr}$)

Neurological

- ▶ Aim of treatment:
 - ▶ Seizures & trismus:
 - ▶ Benzodiazepines (Diazepam v Midazolam)
 - ▶ Magnesium
 - ▶ Treat Bacteria:
 - ▶ Antibiotics (Metronidazole 500mg IV)
 - ▶ Remove Tetanus toxins:
 - ▶ Tetanus immunoglobulin

Other Nursing Considerations

- ▶ Darkened, quiet side room to reduce external noises that could trigger a seizure.
- ▶ Nutrition, via naso-gastric tube
- ▶ Wound care principles (WHO 2017):
 - ▶ Never close infected wounds
 - ▶ Do not close contaminated wounds and clean wounds that are more than six hours old.
 - ▶ Prevent infection

Outcome

- ▶ Death caused by sudden laryngospasm, diaphragmatic paralysis, and inadequate respiratory muscle contraction (Taylor 2006)
- ▶ Nigeria reported a mortality of 70% (Ajose & Odusanya, 2009).
- ▶ Democratic Republic of Congo, reported tetanus accounted for 2.5% of all admissions and had a mortality of 52.4% (Muteya et al, 2013).

Lessons learnt & Summary

- ▶ History
- ▶ Airway management plan
- ▶ Control of seizures
- ▶ Tetanus can be fatal, and affects all ages.
- ▶ International nursing opportunities provide an opportunity to learn from our peers and experience different conditions not seen in the UK.
- ▶ With the incidence of tetanus is reducing globally, nurses may have limited experience in dealing with patients with this infection.

Thank you

Further reading:

Carter C. Viveash S. (2016). Nursing a critically ill tetanus patient in an intensive care unit in Zambia. *British Journal of Nursing*. 26. 9. 489-496

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